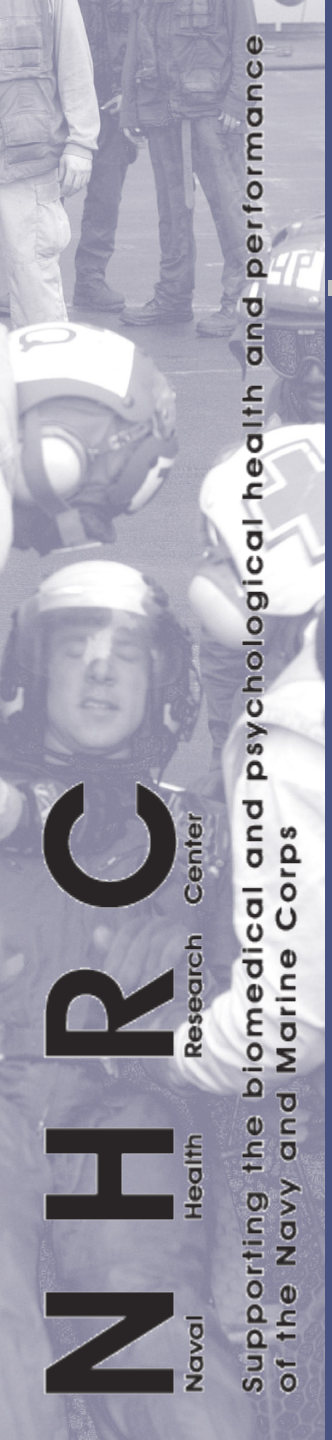
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Respiratory Illness Surveillance Aboard Ships

DoD Center for Deployment Health Research

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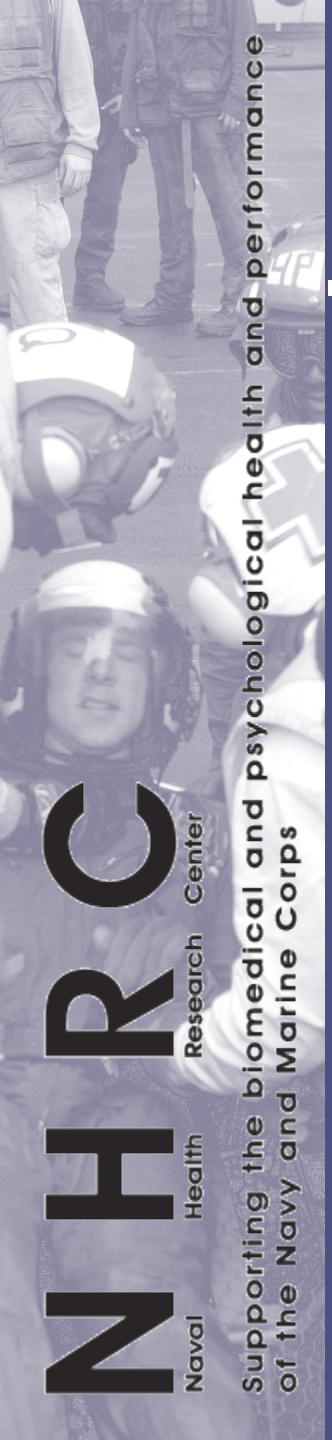
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Gregory C. Gray
Respiratory Disease Laboratory at NHRC

- **Established in Summer 1995**
- **Began adenovirus surveillance at 5 basic training sites in October 1996**
- **Expanded testing to include other viral pathogens in June 1998**
  - Influenza A & B, RSV, PIV 1-3
  - 8 basic training sites
- **Lab also has bacterial and molecular diagnostic capabilities**
- **Received C.A.P. certification in 1999, 2001, and 2003**

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DoD Febrile Respiratory Illness Among Recruits: Surveillance Sites

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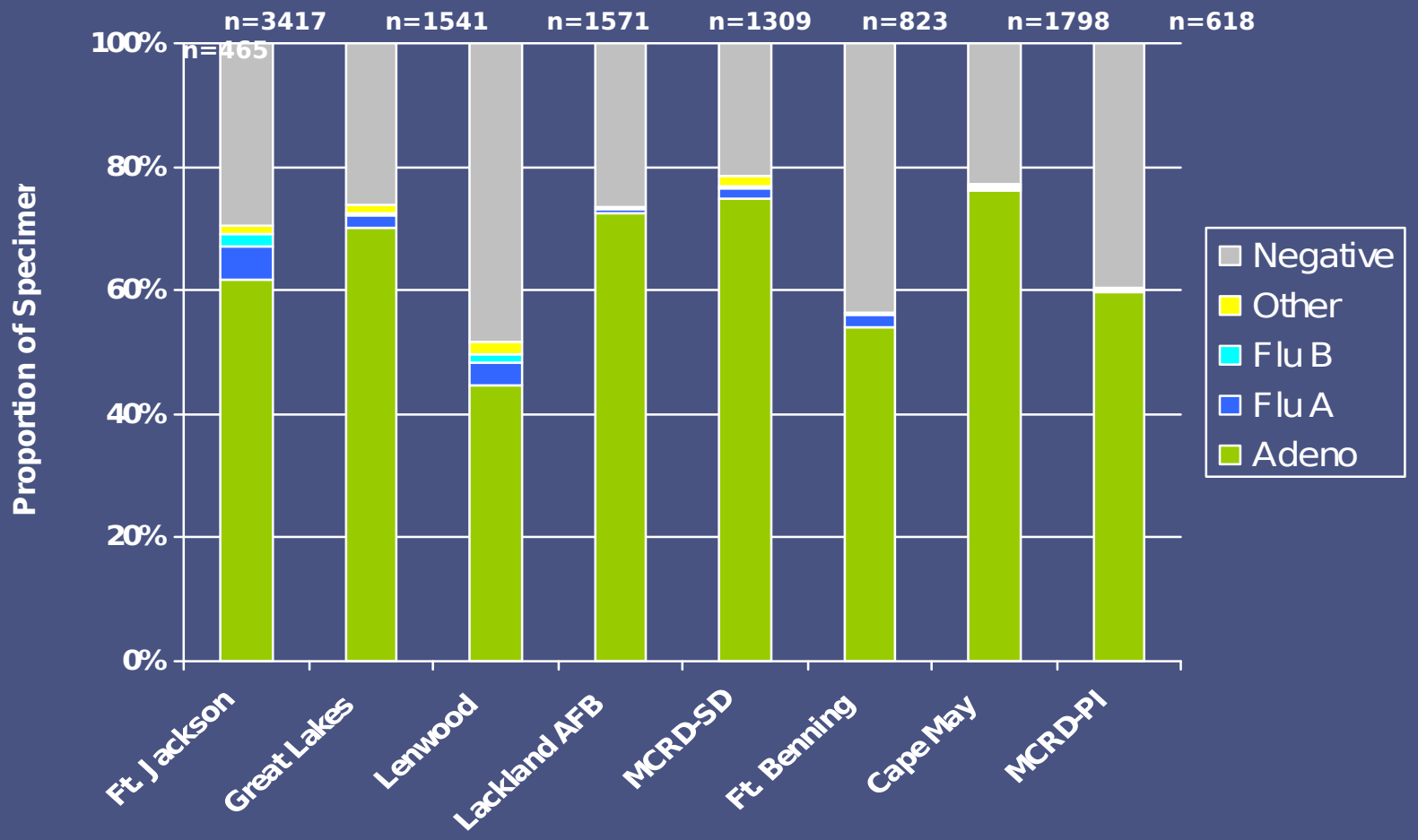
Distribution of Viral Test Results by Site

June 1998 - February 2003
n=11,542



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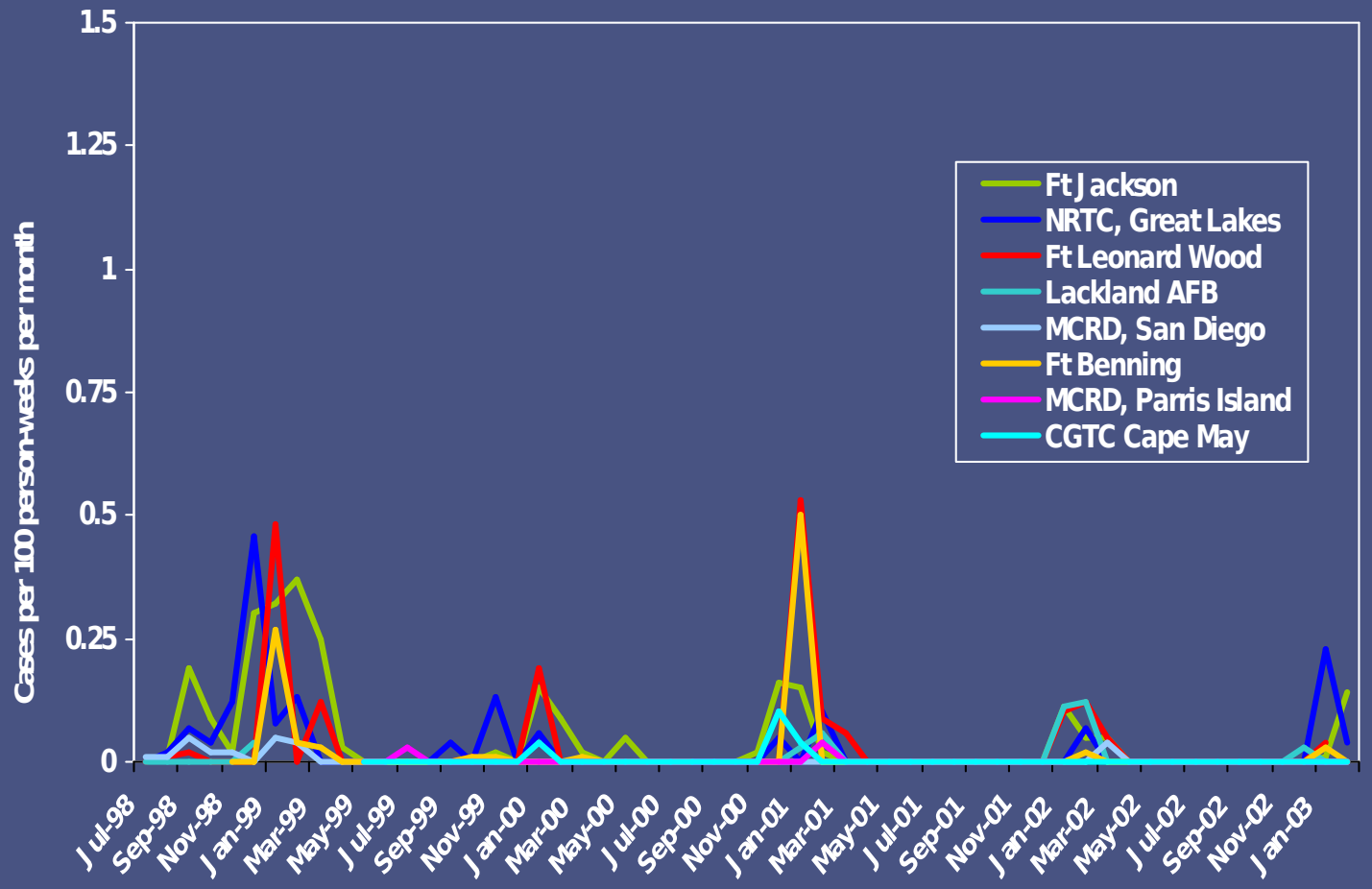
Influenza Infection Rates at Basic Training Centers



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BUT: What is Distribution of Respiratory Pathogens Aboard US Naval Ships?

- **USS Arkansas Outbreak**
  - FRI epidemic in Feb 96 forced ship into port for 2 days
  - 41% of 526 crew were sick
  - NHRC viral testing showed that it was Influenza A, despite 95% of crew with previous vaccination
  - Included in ’96/’97 influenza vacc

- **USS Tarawa Outbreak**
  - FRI outbreak while on WESTPAC in early 2001
  - Viral culture specimens were obtained, preserved, and sent to NHRC in May 2001
  - 37/68 (54%) of specimens positive for influenza, type A (H3N2)
  - Different than the type A strain seen at US recruit camps

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Surveillance Aboard U.S. Navy Ships

- **Initiated late 2002**
- **Currently underway aboard 5 ships**
  - More to be added in Dec 2003
- **Approximately 130 specimens collected as of Sep 2003**
  - Influenza A and B found among first specimens tested

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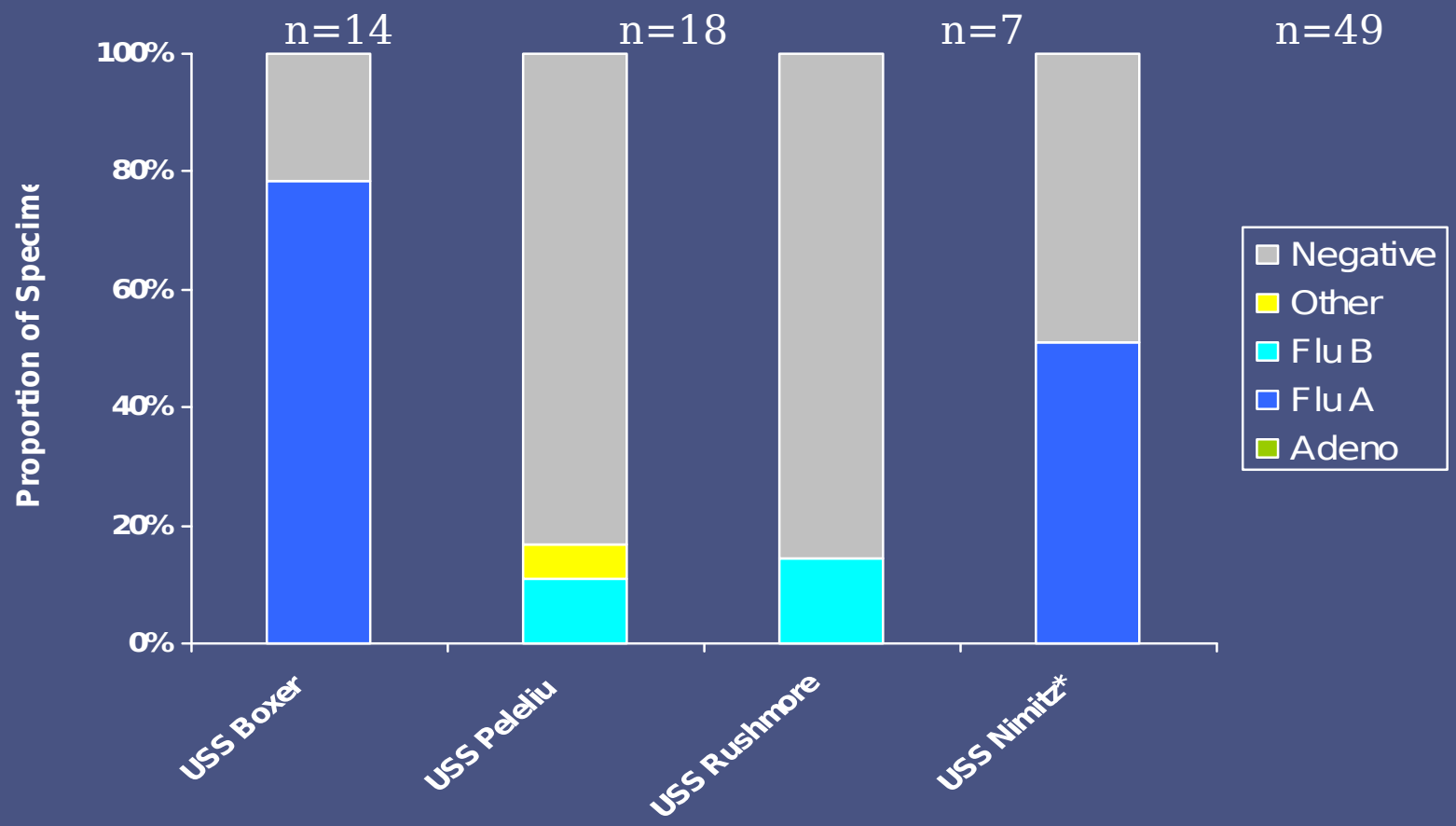
Viral Testing Results – Shipboard FRI



*Preliminary PCR results

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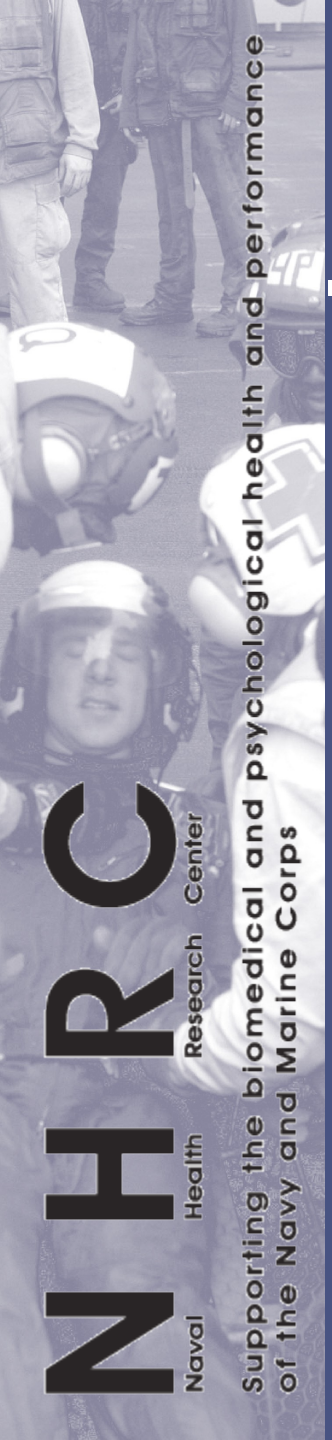
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Key Findings to Date

- **Influenza A among Boxer sailors**
  - All cases occurred right after a port call in Sydney, Australia July 2003
  - All appear to be the southern hemisphere H3N2 strain for this year
- **FRI cases aboard the Peleliu October 2003**
  - After a port call in Singapore
  - Etiology TBD when ship returns to San Diego
- **Successful implementation, with 4/4 influenza yield**
- **Adenovirus not seen among specimens tested to date**

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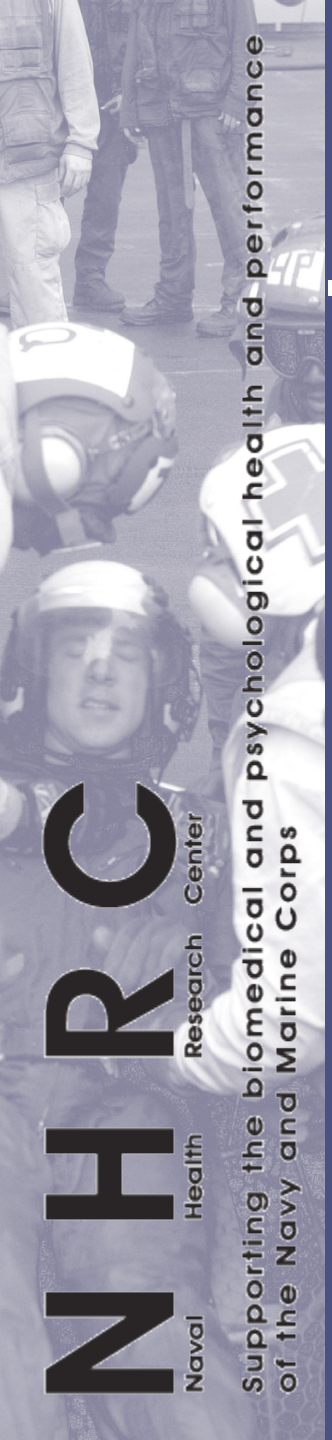
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Surveillance Aboard Aircraft Carriers using Light Cycler PCR

- **Count FRI cases and collect specimens**
- **Test specimens using light cycler PCR equipment that is already on board**
  - Adenovirus
  - Influenza A
  - Influenza B
- **Medical staff will maintain familiarity and proficiency with the PCR equipment**
  - Needed for emergency situations
  - such as possible bioterrorist attacks
- **Currently underway aboard USS Nimitz**

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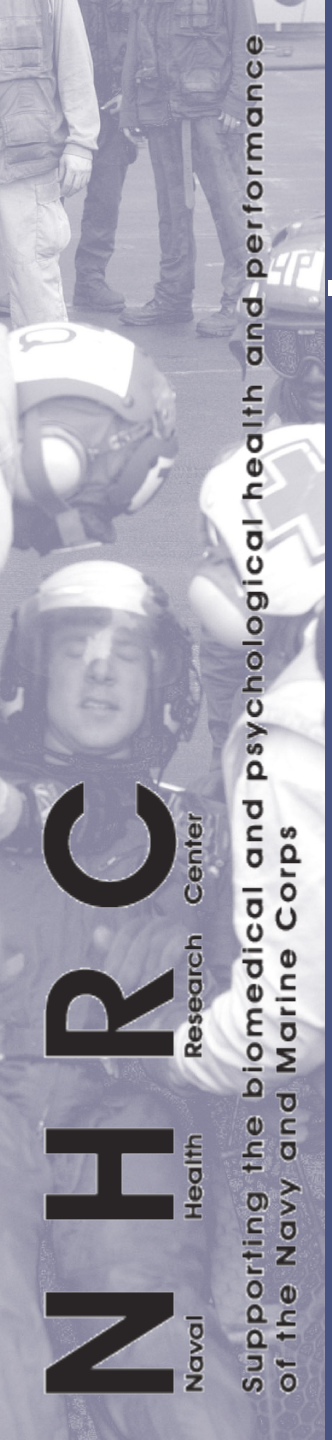
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Burden to Health Providers

- **Minimal**
  - Our goal !
- **Count cases meeting definition (incorporated into SAMS?)**
- **Throat swab a selection of individuals (all not necessary, depending on work load, # affected)**
- **Storage of specimens (-70° or liquid nitrogen ideally)**
  - Our staff travels and picks up specimens when in port
  - Minimal disruption of routine

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Benefits to the Fleet

- **Determine which pathogens are causing respiratory illness in the fleet**
  - **Measure burden of adenovirus**
    - Are serotypes the same as those affecting recruits?
    - New vaccine useful in this population?
    - Duration of immunity from oral vaccine?
  - **Detection of novel influenza strains (OCONUS exposures)**
    - Enhance global influenza surveillance/vaccine component
  - **Possible implications for both adenovirus and influenza vaccines**
  - **Results reported back to ship and HQ, pathogens responsible, running rates….**
- **Supplies and system onboard if ne**
  - Outbreaks
  - Unusual presentations

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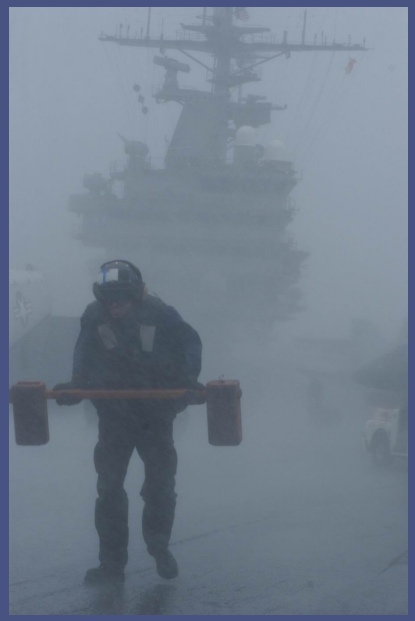
Benefits to the Fleet

- **Additional Needs?**
  - How can we use our resources to make this useful for you
    - Internet access of results
    - Emails of rates for quick perusal



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